CLAIMS

I claim:

1.  A computer system, comprising:

    a processor;

    a bridge coupled to the processor;

    a first expansion bus coupled to the bridge;

    a second expansion bus coupled to the bridge;

    a plurality of expansion slots; and

    a bus switching mechanism to assign at least one of the plurality of expansion slots between the first expansion bus and the second expansion bus.

2.  The system of claim 1, wherein the bus switching mechanism dynamically assigns at least one of the plurality of expansion slots based on a number of available expansion slots.

3.  The system of claim 1, wherein the bus switching mechanism dynamically assigns at least one of the plurality of expansion slots based on a type of a device in at least one of the plurality of expansion slots.

4.  The system of claim 1, an expansion slot of the plurality of expansion slots, comprising:

    a presence detect pin to detect a type of a device in the expansion slot and to provide a bus selection signal to the bus switching mechanism to indicate a type of bus between the first expansion bus and the second expansion bus to connect with the expansion slot, the type of expansion bus matching the type of the device.

5.  The system of claim 4, wherein the expansion slot fits a first device type and a second device type.

6.  The system of claim 4, wherein the bus switching mechanism dynamically assigns at least one of the plurality of expansion slots based on a software programmable bus selection signal.

7. The system of claim 6, wherein the software programmable bus selection signal comprises a general purpose input/output signal.

8. The system of claim 1, wherein the first expansion bus and the second expansion bus comprise buses of a different bit size.

9. The system of claim 1, wherein the first expansion bus and the second expansion bus comprise buses of a same bit size.

10. The system of claim 1, wherein the first expansion bus and the second expansion bus comprise buses of a different type.

11. The system of claim 1, wherein the first expansion bus and the second expansion bus comprise buses of a different speed.

12. The system of claim 1, wherein the first expansion bus and the second expansion bus comprise buses of a same type.

13. The system of claim 1, wherein the first expansion bus and the second expansion bus comprise buses of a same speed.

14. The system of claim 1, wherein the bus switching mechanism comprises a bus switch.

15. The system of claim 1, wherein the bus switching mechanism comprises a multiplexor.

16. A method of dynamic load balancing in a computer system including a plurality of expansion slots and a plurality of expansion buses, the plurality of expansion buses including a first expansion bus and a second expansion bus, the method comprising the steps of:

generating a bus selection signal; and

switching electrical connection of an expansion slot of the plurality of expansion slots from the first expansion bus to the second expansion bus corresponding to the bus selection signal.

17. The method of claim 16, wherein the bus selection signal is software programmable.

18. The method of claim 16, wherein the bus selection signal comprises a presence detect signal to detect a type of a device in the expansion slot.

19. The method of claim 16, wherein the bus selection signal comprises a presence detect signal to detect a bit size of a device in the expansion slot.

20. The method of claim 16, wherein the bus selection signal is based on a plurality of presence detect signals to detect availability of each expansion slot of the plurality of expansion slots.

21. The method of claim 16, wherein the first expansion bus comprises a Peripheral Component Interconnect (PCI) bus.

22. The method of claim 16, wherein the bus selection signal is based on a load of the plurality of expansion buses.

23. The method of claim 16, further comprising the step of:
holding a plurality of devices in the plurality of expansion slots in a reset state until the switching step is complete.

24. The method of claim 16, further comprising the step of:
isolating the first expansion bus from the expansion slot.

25. The method of claim 16, wherein the expansion slot comprises a Peripheral Component Interconnect (PCI) slot.

26. The method of claim 16, wherein the first expansion bus comprises a Peripheral Component Interconnect X (PCI-X) bus.

27. The method of claim 16, further comprising the step of:
resetting the computer system after the switching step.

28.    The method of claim 16, wherein the bus selection signal comprises a presence detect signal to detect a speed of a device in the expansion slot.